



EUROPEAN MICROWAVE WEEK 2015

SIX DAYS • THREE CONFERENCES • ONE EXHIBITION

PALAIS DES CONGRÈS, PARIS, FRANCE
SEPTEMBER 6 - 11, 2015

Exhibition Opening Hours:

- Tuesday 8th September: 9.30 – 18.00
- Wednesday 9th September: 9.30 – 17.30
- Thursday 10th September: 9.30 – 16.30

SiGe for mm-Wave and THz

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WS12: EuMIC - *SiGe for mm-Wave and THz*

Research in Europe on Bipolar Circuits and Technology

- RF2THz
 - Catrene
 - Cluster for Application and Technology Research in Europe on NanoElectronics
 - www.catrene.org/
- DOTSEVEN
 - 7th Framework Programme (European commission)
 - Integrated Project, section ICT: Information and Communication Technologies
 - <http://cordis.europa.eu/fp7/ict/programme/>

DOTSEVEN at a glance

- Development of a SiGe HBT technology with cut-off frequency ($f_{\max}$) around 700 GHz (0.7 THz).
 - Demonstration of manufacturability and integratability with CMOS
 - Demonstration of capabilities and benefits of 0.7 THz SiGe HBT technology by benchmark circuits and system applications in the 0.1 to 1 THz range
- 6 European countries, 13 partners
- 42 months duration: from 01.10.2012 to 31.03.2016
- EC grant: 8.600.000€ for a budget of ~12M€
- Coordinator:
 - Rudolf Lachner – INFINEON,
 - Deputy : Klaus Aufinger – INFINEON
 - Technical Director: Michael Schroter, University Dresden, San Diego

Overview

- This workshop will cover SiGe HBT technologies as well as SiGe enabled mm-wave and THz applications.
- SiGe technologies have passed the 600 GHz barrier in terms of maximum oscillation frequency and the 700 GHz barrier is foreseen to fall in 2015.
- Intrinsic advantages of SiGe HBTs:
 - co-integration with CMOS
 - => design of compact, reliable and cost efficient systems for mm-wave applications.
- 4 sessions (with 2 (3) speakers each)
 - Session 1: World-leading SiGe technologies from Europe (9h10-10h40)
 - Coffee Break: 10h40-11h20
 - Session 2: Compact modelling and design challenges for mm-wave and THz devices and circuits (11h20-12h50)
 - Buffet Lunch Break: 12h50-14h20
 - Session 3: Radar related innovative design concepts (14h20-16h00)
 - Coffee Break: 16h00-16h30
 - Session 4: Application challenges and potential solutions for qualified products (16h30-18h00)
 - 18:00 - 18:20 Open discussion and concluding remarks
- Download the slides @:
<http://www.iee.et.tu-dresden.de/iee/eb/res/dot7/dot7.html>
Or send a mail: thomas.zimmer@ieee.org

Session 1: World-leading SiGe technologies from Europe

- **9:10 - 09:40 “Advances in SiGe BiCMOS Technology for mm-Wave Applications in the DOTSEVEN Project”**
 - *Klaus Aufinger*, Infineon, Germany
- **9:40 - 10:10 “55nm SiGe BiCMOS for Optical, Wireless and High-Performance Analog Applications”**
 - *Pascal Chevalier*, STMicroelectronics, France
- **10:10 - 10:40 “Optimization of vertical doping profiles for high-speed SiGe HBTs”**
 - *Holger Rücker*, IHP, Germany



Session 2: Compact modelling & design challenges for mm-wave/THz devices & circuits

- **11:20 - 12:05 “Impact of physical effects and compact modeling on mm-wave circuit performance”**
 - *Andreas Pawlak*, Dresden University of Technology, Germany
- **12:05 - 12:50 “Challenges in Modeling, Design, and Characterization of Terahertz Circuits in Silicon”**
 - *Ullrich Pfeiffer*, University of Wuppertal, Germany

Session 3: Radar related innovative design concepts

- **14:20 - 15:05 “From Adaptive Modulation Schemes towards Software Defined Radar (SDR)”**

- *Andreas Stelzer, Johannes Kepler University Linz, Austria*

- **15:05 - 16:00 “Concepts for Highly Integrated Automotive Radar Circuits”**

- *Herbert Jäger, Infineon - DICE GmbH & Co KG, Austria*

- *Matthias Porranzl, Johannes Kepler University Linz*



Session 4: Application challenges and potential solutions for qualified products

- **16:30 - 17:15 “Beyond 10 Gbit/s mm-wave wireless communication using SiGe BiCMOS transceivers”**
 - *Erik Öjefors, SiversIMA, Sweden*
- **17:15 - 18:00 “Application challenges and potential solutions for robust radar sensors”**
 - *Dirk Steinbuch, Bosch, Germany*



Annoucement: Seminar

- **Title: SiGe-THz devices: Physics and reliability**
- **Place:** University of Bordeaux, France
351 cours de la Liberation, IMS, Bat A31, Amphitheatre J.-P. Dom
- **Date:** December 17, 2015
- **Preliminary Programme**
 - **Session 1: Physics based device simulation (9h15-10h45),**
 - Christoph Jungemann, RWTH Aachen University
 - **Session 2: Safe operating limits of SiGe-THz devices (11h00-12h30),**
 - Anjan Chakravorty, IIT Madras, India
 - **Session 3: Reliability of SiGe-THz devices (14h00-15h30),**
 - Grazia Sasso, University of Naples, Italy
 - **Session 4: Reliability aware circuit design (15h45-17h15),**
 - Cristell Maneux, University of Bordeaux, France
- **Contact:** thomas.zimmer@ims-bordeaux.fr

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